REMARKS

Claims 1-28 remain pending in the present application. Applicants greatly appreciate the thorough examination of the present application, the allowance of claims 1-15, 17-21 and 23, and the indication of allowable subject matter in dependent claim 27. Clarifying amendments have been made to the present specification, drawings and claim 16 to address the objections and rejections raised in this Office Action. Accordingly, reconsideration and allowance for all of the claims in the present application are earnestly solicited in view of the following amendments and remarks.

The disclosure and drawings have been objected by alleging that each of segment groups 50-54 and 60-64 are not clearly specified as belonging to the acceleration or deceleration elements, and that the acceleration and deceleration electrodes being segmented must be shown. The present specification has been amended to more clearly specify each of segment groups 50-54 and 60-64 belonging to the acceleration electrode 12 and/or the deceleration electrode 13. To further clarify these configurations, the drawings have been amended to provide Fig.7A and Fig. 7B in place of Fig. 7 which more clearly illustrate the segment groups belonging to the acceleration electrode 12 in Fig. 7A and the segment groups belonging to the deceleration electrode 13 in Fig. 7B. Accordingly, it is respectfully requested that the objection to the disclosure and drawings be reconsidered and withdrawn.

Claims 1, 6 and 8-10 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,365,070 to Anderson et al. Based on the allowance of claims 1, 6 and 8-10, it appears that this rejection may have may mistakenly carried over from the previous Office Action into the present Office Action. However, if this rejection is proper, it is respectfully submitted that claims 1, 6 and 8-10 are not anticipated by Anderson et al. for at least the reasons set forth in the response to the previous Office Action. Accordingly, it is respectfully requested that this rejection be reconsidered and withdrawn.

Claim 16 stands rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,335,535 to Miyake. This rejection is respectfully traversed.

Claim 16 of the present application, as amended, recites an apparatus for producing a low energy ion beam comprising an acceleration electrode and a deceleration electrode. At least one

of these electrodes is segmented in a direction lateral to the ion beam to define individually controllable electrode segments so that the electrode segments may have independent voltages applied thereto for adjusting the density and focus of desired parts of the ion beam. As a result, a more uniform beam density and focus may be obtained across the width of the beam.

Miyake is relied upon to disclose a method for implanting hydrogen ions to a predetermined depth of a semiconductor substrate. As illustrated in Fig. 10, an ECR plasma generating apparatus is shown which includes an accelerating electrode 375, a decelerating electrode 376 and a ground electrode 377. Each of these electrodes are multi-aperture electrode plates which are used for extracting ions therefrom. In contrast to claim 16 of the present application, the implanting method of Miyake fails to disclose segmenting the electrodes and applying independent voltages to tailor the focus of the ion beam by adjustments thereof. Claim 16 of the present application recites that the acceleration and/or deceleration electrodes are segmented with independent voltages applied thereto so that a more uniform beam density and focus may be obtained across the width of the beam. Miyake only discloses that the electrodes are multi-aperture electrodes and therefore does not disclose segmenting of the electrodes which allows independent voltages to be applied within each of the electrodes so that a more uniform beam density and focus is realized as in the claim 16 of the present application. Accordingly, it is respectfully submitted that claim 16 is not anticipated by Miyake.

Claims 22 and 24-26 and 28 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,870,284 to Hashimoto et al. This rejection is respectfully traversed.

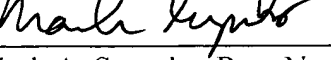
Claims 22, 24-26 and 28 recite apparatus, systems and methods for producing low energy ion beams. Claims 22 and 26 recite that acceleration and/or deceleration electrodes are segmented. Claims 23 recites that that the voltage difference between the acceleration electrode and the deceleration electrode are 5 KeV or more. Claims 24 and 25 recite that the potential on the deceleration and/or deceleration electrodes are varied transversely with respect to the beam line. Segmenting the electrodes and varying the voltages can tailor the focus of the ion beam by adjustments and variations in the segmentation and voltages. Claim 28 recites that the apparatus further comprises an electron repulsion electrode and a final beam plasma and that the electron repulsion electrode has a voltage sufficiently negative to substantially prevent electrons from being pulled out of the final beam plasma to the deceleration electrode.

Hashimoto is relied upon to disclose an ion source including a plasma chamber and at least three parallel electrodes for drawing out an ion beam from the plasma chamber. Fig. 1A illustrates acceleration electrodes 2 and 3, a deceleration electrode 4, and a grounded electrode 5. Each of these electrodes has a plurality of apertures aligned with those disposed in the other electrodes for drawing out an ion beam 12. In Fig. 3B, only three electrodes, an acceleration electrode 2, a deceleration electrode 4 and a grounded electrode 5, are utilized. In contrast to the claims of the present application, the ion source of Hashimoto fails to disclose segmenting the electrodes and varying the voltages to tailor the focus of the ion beam by adjustments thereof. The claims of the present application recite that the acceleration and/or deceleration electrodes are segmented with selected voltages applied thereto so that a more uniform beam density and focus may be obtained across the width of the beam. Hashimoto only discloses that the electrodes include apertures and therefore does not disclose segmenting of the electrodes which allows selected voltages to be applied within each of the electrodes so that a more uniform beam density and focus is realized as in the claims of the present application. Accordingly, it is respectfully submitted that claims 22, 24-26 and 28 are not anticipated by Hashimoto.

In view of these amendments and for all of the above stated reasons, it is respectfully submitted that all of the outstanding objections and rejections have been overcome. Therefore, it is requested that claims 16, 22 and 24-28 along with allowed claims 1-15, 17-21 and 23 of the present application be passed to issue.

If any issues remain unresolved, the Examiner is requested to telephone the undersigned attorney. Please charge any additional fees or credit any overpayments to deposit account No. 50-0896.

Respectfully submitted,
John H. Keller et al., Applicants

By: 

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Enclosure: Replacement Sheets for Fig. 7
Docket No. VSEA 14-00